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Reactionary Hemorrhage in Gynecological Surgery

Mark Erian, FRCOG, MD, Glenda Mc Laren, FRCOG, Akram Khalil

ABSTRACT

Background: Bleeding is a major complication in contemporary gynecological surgery. We discusses this rare, albeit potentially serious, unexpected complication. The authors mean by "reactionary," hemorrhage that occurs within the first 24 hours after surgery. More or less, all gynecological surgeons have had to deal with this situation at some stage of their career. The seriousness of this complication stems from the fact that often the surgeon is not in the immediate vicinity to promptly step in and treat the patient. Nevertheless, the key to successful management is prompt diagnosis, immediate resuscitation, and operative intervention.

Methods: By using the collective hospital database, we reviewed 719 patient records. The authors operated on these patients between November 1990 and March 2007 (inclusive) in one hospital, Royal Brisbane and Women's Hospital, the main teaching hospital in Brisbane, Queensland, Australia. The procedures performed in the 719 patients comprised 476 vaginal hysterectomies and 243 laparoscopic hysterectomies. Both public and private patients were included. The objective of the review was to establish the incidence of postoperative reactionary hemorrhage following the initial operation, as defined by the number of patients returning to the operating theatre (OT) because of postoperative hemorrhage within 24 hours of the initial hysterectomy.

Results: Of the 719 patients, 6 experienced reactionary postoperative hemorrhage, 3 each in the vaginal hysterectomy and laparoscopic hysterectomy groups. That would make the incidence of postoperative reactionary hemorrhage 0.6% in the vaginal hysterectomy and 1.2% in the laparoscopic hysterectomy group. None of these 6 patients had any preoperative hemorrhagica diatheses. There was neither ureteric, bladder, intestinal, nor any other injuries in the whole series. No long-term complications or mortalities occurred.

Conclusion: Reactionary postoperative hemorrhage is a rare, albeit serious, complication of contemporary gynecological surgery; this complication may occur despite meticulous surgical technique. The key to successful management is prompt diagnosis, urgent resuscitation, and return to the OT to arrest the bleeding.

Key Words: Reactionary hemorrhage, Gynecological surgery.

INTRODUCTION

Hemorrhage is a rare, albeit serious, complication of gynecological surgery.[1] Despite meticulous surgical technique, and attention to detail, postoperative bleeding may occur. In many respects, postoperative bleeding is more sinister than intraoperative bleeding, because in the latter, the surgeon would not normally leave the operating theater (OT) until hemostasis has been accomplished, whereas in postoperative bleeding the gynecological surgeon may have already left the OT, or indeed, may not be physically present in hospital when the postoperative bleeding is diagnosed. This could further delay the management of an already compromised patient. Bleeding begets bleeding, and the patient could eventually develop disseminated intravascular coagulopathy, and even death. Nevertheless, no patient in this series suffered either of these sequelae.

Gynecological surgeons and, in fact all surgeons, must have a drill (fast action plan) to promptly treat patients with postoperative bleeding. Resuscitation and blood transfusion have to urgently start and continue during the surgical management of the patient to stop the bleeding.

Reactionary postoperative gynecological hemorrhage seems to be an area of paucity in the international medical literature. The aim of this manuscript is to assess the

Department of Obstetrics and Gynaecology, University of Queensland, Royal Brisbane and Women's Hospital, Herston, Australia (Dr Erian).

Obstetrician and Gynaecologist, Brisbane, Australia. (Dr Mc Laren).

Royal Brisbane and Women Hospital, Herston, Australia (Dr Khalil).

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Address reprint requests to: Mark Erian, Associate Professor, Department of Obstetrics and Gynaecology, Royal Brisbane and Women's Hospital, Herston Q4029, Australia. E-mail: M.Erian@uq.edu.au

incidence of reactionary postoperative hemorrhage in contemporary gynecological surgery. The authors chose 2 commonly performed operations, vaginal hysterectomy and laparoscopic hysterectomy, to assess the incidence of reactionary postoperative hemorrhage. All these operations were performed at the Royal Brisbane and Women's Hospital, Brisbane, Australia. This is the largest tertiary referral center in Australia. The hospital database was used to do a retrospective analysis of patients who underwent vaginal laparoscopy or laparoscopic hysterectomy and suffered reactionary postoperative hemorrhage. The operations were performed from November 1990 to March 2007 (inclusive).

METHODS

All patients attending the Royal Brisbane and Women's Hospital for a surgical procedure have their full details entered into the hospital database. Patients who underwent vaginal hysterectomy or laparoscopic hysterectomy were noted. There were 719 patients operated on by the authors between November 1990 and March 2007 (inclusive). These 719 operations were divided into 2 groups: vaginal hysterectomy[476] and laparoscopic hysterectomy.[243] Both public and private patients were included.

Patients that were readmitted to the OT within the first 24 hours following the initial surgery were flagged and their details analyzed. Patients' age, parity, body mass index (BMI), history of previous pelvic surgery and in particular caesarean deliveries were noted as well as the uterine size and pathology. All these patients exhibited manifestations of hemorrhagic (surgical) shock with profound tachycardia, hypotension, cold clammy sweating, pallor, and clinical evidence of free blood in the peritoneal cavity. Immediate resuscitation, including grouped and cross-matched blood transfusion, was started prior to, and during, the return of the patient to the OT for exploratory operative laparoscopy/laparotomy. The principles of exploratory operations were exposing the former operation field of the hysterectomy by copious irrigation/suction using Ringer's solution (usually 2 liters to 3 liters was used), arresting hemorrhage either by suturing/coagulating a bleeding vessel, or suturing any raw areas, and local application of oxygenated cellulose (Surgicel) to encourage aggregation of blood platelets and affect hemostasis.

Complete hemostasis must be accomplished before closure of the wound(s). One to two 6-mm drain(s) were left in the former Pouch of Douglas as a safeguard to observe any recurrences of bleeding.

RESULTS

Each group comprised 3 patients. The incidence of reactionary postoperative hemorrhage was 0.6% in the vaginal hysterectomy and 1.2% in the laparoscopic hysterectomy groups. None of these 6 patients had genital prolapse or underwent concomitant surgery.

The distribution of the 6 patients who experienced reactionary postoperative bleeding was even throughout the above-mentioned period, and occurred despite the gynecological surgeon in charge using adequate transfixion to all vascular pedicles, affecting satisfactory intraoperative hemostasis, using Ringer's solution to ascertain the absence of active bleeding, and routinely inserting at least one 6-mm drain in the pelvis at the conclusion of the vaginal/laparoscopic hysterectomy procedure. Because the current series included only 6 patients who suffered reactionary postoperative bleeding, a meaningful statistical analysis would not be practicable. Nevertheless, it was noted that the average BMI was 33 kg/m^2 (range, 24 to 48); uterus weight averaged 195 g (range, 120 to 394); the patient's median age was 36 years (range, 27 to 51); patient's parity, on average, was 2 children (range, 0 to 4). One patient each in the vaginal hysterectomy and laparoscopic hysterectomy groups had a history of one previous caesarean delivery scar. Four of the 6 patients (2 each in the vaginal hysterectomy and laparoscopic hysterectomy groups) had extensive pelvic adhesions attached to the uterus. None of the treated patients suffered any long-term complications, and there were no mortalities. The incidence of uterine pathology, eg, leiomyomata and adenomyosis, were similar in both groups.

Regarding the mode of emergency treatment, operative laparoscopy was performed in one patient in each of the vaginal and laparoscopic hysterectomy groups. There were no specific bleeding points in any patient; nevertheless, excessive blood clots were in the pelvis and nearly "bathing" the intestines. Following laparoscopic irrigation/suction using Ringer's solution to clear the operative field, a combination of laparoscopic suturing using absorbable suture material, eg, Monocryl (0) (Ethicon, Australia) and laparoscopic bipolar coagulation were used. Two patients in each group underwent emergency laparotomy. Irrigation/suction was performed, and absorbable Vicryl Number 1(Polyglactin 910 suture) (Ethicon, Australia) was used to re-do the whole operation field (including the vascular pedicles). Once the gynecological surgeon was happy about hemostasis, 2 negative suction drains (6 mm each) were left in the pelvis, in the laparoscopy or laparotomy groups, to ascertain maintenance of complete

hemostasis, and the wounds were closed. The drains were removed once drainage had nearly stopped (usually in 24 hours). Following emergency operations to stop reactionary hemorrhage, all patients were transferred to the high dependency unit until they were deemed clinically stable, before they were transferred back to the gynecology inpatient ward. On average, the duration of operative laparoscopy was 75 minutes (range, 55 to 95), and 39 minutes (range, 28 to 50) for laparotomy. In our institution, patients are hospitalized for 2 days and 1 day following an uneventful vaginal hysterectomy and laparoscopic hysterectomy, respectively. However, in the current series, emergency operative laparoscopy to manage the reactionary postoperative hemorrhage prolonged the hospitalization by 1.5 more days; in the cases of emergency laparotomy the hospital stay was extended by 3 more days. Estimated blood loss was 2 liters (range, 1.5 to 2.5) as per the combined assessment of the gynecological and anesthetic teams.

Following the required blood transfusion (intra- and postoperative), all patients were started on twice daily oral iron and vitamin C to enhance iron absorption. Daily laboratory full blood count was performed for the inpatients, and patients were discharged when asymptomatic and the hemoglobin level was more than 80 g/L. All patients underwent full blood count testing at their 6-week follow-up visits. None of them had laboratory evidence of anemia.

DISCUSSION

Postoperative hemorrhage is a significant potential complication of contemporary gynecological surgery.[2] However, reactionary postoperative bleeding that occurs within the first 24 hours following surgery, commonly within the first 4 hours to 6 hours postoperative, is particularly troublesome, because the gynecological surgeon is often not within the immediate vicinity of the operating theatre. Consequently, urgent surgical intervention may not be within reach. Nevertheless, it is crucial that assessment, and blood transfusion start once the postoperative hemorrhage has been diagnosed. The blood transfusion may continue during and after the emergency operative procedure to manage the reactionary postoperative hemorrhage. Minimizing patient morbidity and avoiding mortality are dependant on efficient teamwork. The nursing staff at the recovery bay, operating theatre, and inpatient wards have to be diligent in early recognition and prompt notification of postoperative hemorrhage, and systematic intervention would help avoid poor outcomes.[3]

Regardless of the method used to affect hemostasis in hysterectomy operations, postoperative reactionary hemorrhage may rarely occur, despite the fact that the gynecological surgeon who performed the procedure is very experienced.[4–7] That was the case in our present series. However, our reactionary postoperative rate was 0.6% and 1.2% following vaginal and laparoscopic hemorrhage, respectively. Our presented figures compare favorably with those of other centers. In a large series that included 10 110 hysterectomy procedures, Mäkinen et al[8] reported postoperative bleeding rates of 3.1% and 2.7% in vaginal and laparoscopic hysterectomy, respectively. Similarly, McPherson et al[9] in a large-scale study that included

37 512 patients in the United Kingdom showed that laparoscopic hysterectomy has an operative complication rate of 6.1%, double that of abdominal hysterectomy, and the intra- and postoperative bleeding occurred in younger women, women with a more vascular pelvis who underwent hysterectomy, especially laparoscopic hysterectomy in the presence of fibroids. However, abdominal hysterectomy is associated with a longer hospitalization, slower recovery and return to the workforce compared with laparoscopic or vaginal hysterectomy.[10,11] Intra- and postoperative bleeding is not significantly different in vaginal compared with abdominal hysterectomy for enlarged uteri.[12]

Operative laparoscopy is ideal to treat hemorrhage after vaginal or laparoscopic hysterectomy.[13] However, it must be remembered that operative laparoscopy, especially in compromised patients, is an organized team effort. The experienced gynecological endoscopist has to use an assistant, and a scrub theatre nursing staff with special interest in advanced gynecological laparoscopic surgery. If such a competent team cannot be assembled, especially after hours, then laparotomy should be affected without delay.

Disseminated intravascular coagulopathy is a well-known complication of surgical bleeding.[14,15] Bleeding begets bleeding, and the end result may escalate to widespread coagulopathy. This is multi-system disorder, and the valuable assistance of a clinical hematologist has to be sought in this multi-discipline care situation. The therapy must be highly individualized according to the patient's age, site and severity of the hemorrhage, and hemodynamic status of the patient.[16] Despite accurate screening for human immunodeficiency virus contamination,[17] many patients and their families are reluctant to authorize a blood transfusion except in life-threatening situations.[18] Clinicians have to fully understand this sensitive issue and reason-

ably respond. In our series, none of the patients suffered disseminated intravascular coagulopathy. Nevertheless, in our institution, all patients were admitted to the high dependency unit for close monitoring following the second operation to treat the reactionary postoperative hemorrhage.

CONCLUSION

Despite meticulous surgical technique to affect a complete intraoperative hemostasis, one would expect a very small percentage of patients to suffer from reactionary postoperative hemorrhage in contemporary gynecological surgery. The principles of management are timely intervention to recognize the complication, resuscitation, and emergency return to the operating theater to stop the hemorrhage, followed by closely monitoring the patient in a high-dependency unit to exclude recurrence of bleeding.

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